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L5: Entry 8 of 15

File: JPAB

Dec 14, 2001

DOCUMENT-IDENTIFIER: JP 2001342661 A

TITLE: HOSE LIFTING DEVICE, DRAIN PIPE WASHING DEVICE USING HOSE LIFTING DEVICE,
DRAIN PIPE WASHING METHOD, AND SANITARY SEWAGE SPLASH PREVENTING TOOLAbstract Text (2):

SOLUTION: This hose lifting device 4 used for washing the drain pipe 3 is provided with a drum 6 wound with the hose one or multiple times and a motor 7 rotating the drum forward or reversely at a nearly constant speed. The hose is lifted via the frictional force between the drum and the hose wound on the drum 2. The drain pipe washing device using the hose lifting device is provided with the hose lifted by the hose lifting device and a nozzle body fitted to the tip of the hose to inject high-pressure water. The nozzle body fitted to the tip of the hose is rotated at the range from 90 rpm to 300 rpm, the nozzle body is moved at the range from 20 mm/sec to 100 mm/sec by the hose lifting device, and the high-pressure water is injected from the nozzle body to wash the drain pipe.

Kornakov

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L5: Entry 3 of 15

File: USPT

May 28, 1996

DOCUMENT-IDENTIFIER: US 5520746 A

TITLE: Detergent for cleaning drain pipeAbstract Text (1):

A detergent for cleaning drain pipe comprises lipocatabolic lipase and an imbibing agent. Sodium hydrogencarbonate may be used as an imbibing agent. The detergent may includes a foaming agent, pH conditioning agent, and/or enzyme activation retaining agent. Tartaric acid may be used as a foaming agent. Sodium carbonate may be used as a pH conditioning agent. N-acylic amino acid may be used as an enzyme activation retaining agent.

Brief Summary Text (9):

It is another object to provide a detergent for use in cleaning a drain pipe which may quickly remove slime in such a drain pipe.

Brief Summary Text (10):

A detergent for cleaning a drain pipe and preventing blockage thereof according to the invention comprises lipocatabolic lipase and an imbibing agent. The detergent of the invention may be in powder or solution dissolved in water. The detergent of the invention may be used as a cleaning agent for pipe cleaning operation, as well as a detergent for tableware. Thus, the detergent of the invention may be applied directly to a drain piping or may be used for the purpose of washing tableware. When the detergent is used in order to wash tableware, such detergent washed away from the tableware will adhere to the inner wall of a piping so as to prevent dirty material from adhering to the inner wall of a piping.

Drawing Description Text (3):

FIG. 1 is an illustrative view showing a method for washing drain pipe in a high-rise building by the use of detergent of the invention.

Detailed Description Text (29):

Cleaning of a piping may be carried out using, for example, a device shown in FIG. 1. FIG. 1 is an illustrative view showing a cleaning method for a piping in a high-rise building. In the drawing, reference numeral 3 designates a pump for supplying water under high pressure, 4 a hose connected to a discharge port of the pump, and 5 an injection nozzle attached to the tip of the hose. The nozzle has a injection mouth which will be rotated by means of a propulsion force of a liquid during injection. Reference numeral 6 designates a supply of detergent of the invention. The detergent supply is designed to supply an appropriate amount of detergent to a quantity of water pressurized by the pump 3. Thus, high pressure water ejected from the nozzle 5 contains a predetermined amount of detergent mixed therewith and dissolved therein. When it is intended to wash or clean a piping including a plurality of bends such as elbows or tees, or bent pipe such as ventilation fitting (TM) shown in FIG. 2, a length of hose 4 braided with guide wire 8 is inserted into such piping or pipe. Even in this case, relatively low pressure as mentioned above is sufficiently used so as to conduct cleaning work, without giving any damage to pipe fittings. In a complicated piping in particular, the detergent solution, when ejected, is splashed inside the piping in a mist or fog manner so as to adhere substantially the whole inner surface of the piping. Thus, inner wall of a piping which has been difficult to be cleaned in prior art technique may be securely cleaned.

CLAIMS:

1. A method of cleaning drain pipes or tableware comprising:

forming a composition containing

(a) more than 1%, based on the weight of the detergent composition, of a lipase which has a lipocatabolic ability of 10-100.mu.;

(b) an N-acylic amino acid; and

(c) an imbibing agent in an effective amount wherein the imbibing agent is selected from the group consisting of sodium hydrogen carbonate, magnesium carbonate, calcium carbonate, ammonium hydrogen carbonate, ammonium carbonate and mixtures thereof, and thereafter delivering the composition under pressure to the surface of the drain or tableware to be cleaned.

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File: USPT

Sep 27, 1988

DOCUMENT-IDENTIFIER: US 4773113 A
TITLE: Multiple use cleaning apparatus

Detailed Description Text (19):

Turning now to FIG. 5, shown therein is the free end 100 of the snake hose 26 extending from the hollow hub 30 of the drum assembly 22. As depicted therein the snake hose 26 comprises a cable member 26A which has an inner high pressure hose 26B extending the length thereof. The cable member 26A is an open wind cable wire which is sized to afford good flexibility to the snake hose 26. That is, the cable member 26A is determined to have sufficient stiffness to impart rotation from the drum assembly 22 to a cutter blade and nozzle assembly, while at the same time, it is sufficiently flexible as to easily bend back over itself, such as, for example, by tying a length thereof into a knot by manual pressure alone and to again be extended without permanent distortion.

CLAIMS:

1. A multiple use drain cleaning apparatus comprising:

a frame assembly having a plurality of frame members and a wheel assembly supporting the frame members;

a drum assembly supported by the frame assembly comprising a payout drum, a rotatable drive shaft, and a truck support assembly, the payout drum supported by the drive shaft, the truck support assembly supporting the payout drum and supportable by the frame assembly and selectively removable therefrom, the truck support assembly having a wheel assembly and frame members forming handle portions so that the truck support assembly is usable to support the payout drum separated from the frame assembly;

a snake hose supported by the payout drum and having a near end attached to the rotatable drive shaft and a free end with a nozzle;

spray hose means for providing a source of high pressure fluid for external cleaning operations;

pump means for pressurizing and communicating a fluid to one of the snake hose for discharge by the nozzle at the free end of the snake hose and the spray hose means for discharge therefrom, the pump means comprising a pump supported by the frame assembly, the pump having an inlet port and an outlet port;

fluid means for supplying multiple fluids to dispense;

conduit means for communicating the fluids in selective proportions to the pump inlet port;

~~valve means for alternately directing the fluids to the snake hose or the spray hose~~
means;

power means supported by the frame assembly for selectively driving the pump; and

pressure sensing means supported by the frame assembly and communicating with the spray hose means for selectively activating and deactivating the power means in response to the pressure of the fluids in the spray hose means.

11. A multiple use drain cleaning apparatus comprising:

a frame assembly;

a drum assembly comprising a payout drum and a drive shaft rotatably supported by the frame assembly, the payout drum removably supported by the drive shaft for rotation therewith and replaceable with various sizes of similar payout drums;

a snake hose supported by the payout drum, the payout drum having a central hollow hub through which a free end of the snake hose is extendable and rotatable concentrically with the payout drum, the snake hose having a jetting nozzle member attached to its free end;

electric power means for selectively rotating the drive shaft and the payout drum supported thereby;

spray hose means for providing a source of high pressure fluid therethrough;

pump means for pressurizing and communicating a fluid to the snake hose for discharge by the nozzle member of the snake hose or for pressuring and communicating the fluid to the spray hose means for discharge therefrom, the snake hose having a near end attached for quick disconnect to the rotatable drive shaft of the drum assembly, the power means further characterized as selectively powering the pump means; and

pressure sensing means communicating with the spray hose means for selectively activating and deactivating the electric power means in response to the pressure of the fluids in the spray hose means.

20. A multiple use drain cleaning apparatus for cleaning a drain pipe, comprising:

a frame assembly having a plurality of frame members and a wheel assembly supporting the frame members;

a drum assembly supported by the frame assembly comprising a payout drum, a rotatable drive shaft, and a truck support assembly, the payout drum supported by the drive shaft, the truck support assembly supporting the payout drum and supportable by the frame assembly and selectively removable therefrom, the truck support assembly having a wheel assembly and frame members forming handle portions so that the truck support assembly is usable to support the payout drum separated from the frame assembly;

a snake hose supported by the payout drum, the snake hose having a near end attached to the rotatable drive shaft and a free end with a nozzle extendable into the drain line;

pump means for pressurizing and communicating a fluid to the snake hose for discharge by the nozzle at the free end of the snake hose, the pump means comprising a pump supported by the frame assembly, the pump having an inlet port and an outlet port;

fluid means for supplying multiple fluids to dispense;

conduit means for communicating the fluids in selective proportions to the pump inlet port;

power means supported by the frame assembly for selectively driving the pump; and

first valve means communicating with the outlet port of the pump and having an open mode and a closed mode, in the open mode the first valve means for providing return flow of the pressurized fluids from the pump to the fluid means until the fluid

passing therethrough achieves a predetermined pressure whereupon the first valve means shifts to its closed mode for providing a flow of the pressurized fluids to the snake hose.

31. A multiple use drain cleaning apparatus for cleaning a drain pipe, comprising:

a frame assembly;

a drum assembly comprising a payout drum and a drive shaft rotatably supported by the frame assembly, the payout drum removably supported by the drive shaft for rotation therewith and replaceable with various sizes of similar payout drums;

a snake hose supported by the payout drum, the payout drum having a central hollow hub through which a free end of the snake hose is extendable and rotatable concentrically with the payout drum, the snake hose comprising a hose, a flexible spring supported about the hose at the free end of the snake hose and a jetting nozzle member attached to its free end;

power means for selectively rotating the drive shaft and the payout drum supported thereby;

pump means for pressurizing and communicating a fluid to the snake hose for discharge by the nozzle member, the snake hose having a near end attached for quick disconnect to the rotatable drive shaft of the drum assembly, the power means further characterized as selectively powering the pump means; and

first valve means communicating with the outlet port of the pump for diverting flow of fluids from the pump until the fluids passing therethrough reaches a predetermined pressure whereupon the first valve means closes and directs the pressurized fluids to the snake hose.

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L5: Entry 7 of 15

File: USPT

Aug 18, 1987

DOCUMENT-IDENTIFIER: US 4687011 A

TITLE: Rotary cleaning device for drain pipe and the like

Abstract Text (1):

A rotary cleaning device for drain pipes and the like wherein a universal guide is connected to a nozzle provided at a tip of a high-pressure hose, and the tip of the high-pressure hose is drawn out into the pipe and high-pressure water from the nozzle is jetted radiantly in a slant rearward direction of the nozzle, and the tip of the high-pressure hose is arranged to advance along the pipe sequentially while the high-pressure hose is rotated, whereby the direction of the nozzle is changed according to the rotation of the high-pressure hose, and the nozzle is rotated spirally along the inner wall of the pipe by the change.

Brief Summary Text (4):

When a high-pressure hose is rotated in the vertical pipe and the nozzle connected to the high-pressure hose is rotated in the vertical pipe, the nozzle revolves along the inner wall of the pipe. In this condition, when the high-pressure hose is fed into the pipe by being drawn out gradually from the rotary drum, the nozzle spirally revolves along the inner wall of the pipe. When the drain pipe is a horizontal pipe, even if the high-pressure hose is fed while rotating in the pipe, the nozzle advances straight forward and does not rotate spirally along the wall of the pipe. The high pressure water jet pressure of the nozzle is lowered when it is separated from the wall of the pipe so that in order to break the solid which is adhered and hardened on the upper portion of the pipe, much higher pressure and much more water are required, and thus, the inside of the pipe cannot be cleaned uniformly at high efficiency.

Brief Summary Text (6):

This invention relates to rotary cleaning devices for drain pipe and the like which are used for cleaning the drain pipe and the like of the piping installations in high-rise buildings.

Brief Summary Text (7):

In the device for cleaning the inside of the pipe by high-pressure water that jets from a nozzle provided at a tip of a high pressure hose connected to a high-pressure water feeding device, a universal guide is connected to the tip of the nozzle and the high-pressure water is jetted aslant in a rearward direction of the nozzle radiantly, and the propulsion force is generated in the nozzle by the jet force, and the hose is fed into the pipe while rotating the high-pressure hose, and the inside of the pipe is cleaned by the high-pressure water jetted from the nozzle. In the improved device the direction of the propulsion force of the nozzle is arranged to change according to the rotation of the high-pressure hose, and the nozzle is arranged to revolve spirally in the pipe along the inner wall of the pipe. In this construction, the solid adhered material on the inner wall of the pipe can be pulverized by the high-pressure portion of the jet water jetted from the nozzle, eliminating the loss of quantity of a water and cleaning the inside of the vertical pipe and the lateral pipe at high efficiency.

Detailed Description Text (5):

The cleaning of the drain pipe 46 is carried out by jetting the high-pressure water pressurized by the pump through the jet holes 8, 8a of the nozzle 6 mounted at the

tip of the hose 2. The material adhered to the inside of the pipe is pulverized and removed by the high-pressure water jetted from the nozzle 6 in the aslant rearward direction of the nozzle 6, and at the same time, the nozzle 6 advances in the pipe by the propulsion force of the high-pressure water jetted from the nozzle 6 and the drawing-out of the high-pressure hose 2 by the manual or an automatic operation. In the lateral pipe 46a, as shown in FIG. 5, when the high-pressure hose 2 is rotated in the pipe, the snake wire 11 abuts the inner wall of the pipe by the rotation of the hose 2, and the direction of the nozzle 6 is changed, and as a result, the direction of the propulsion force by the high-pressure jet force of the nozzle 6 is tilted relative to the lateral cross section of the pipe 46a, and the nozzle 6 is revolved spirally along the inner peripheral wall of the pipe by the change of direction of the propulsion force. In the vertical pipe 46b, the high-pressure hose 2 is rotated at a constant speed, and the nozzle 6 is revolved spirally in the inner wall of the pipe by the drawing-out of the high-pressure hose 2, and the jet water jetted through a plurality of jet holes 8, 8a of the nozzle 6 cleans the inner wall of the pipe evenly with efficiency.

Detailed Description Text (6):

As described in the foregoing, to rotate the nozzle spirally in the lateral pipe 46a, it becomes obvious that it can be achieved by changing the direction of the propulsion force of the nozzle 6 according to the rotation of the high-pressure hose 2. In this embodiment, as means for changing the direction of the propulsion force of the nozzle according to the rotation of the high-pressure hose, the construction of tilting the snake wire 11 for .alpha. degrees relative to the center axial line of the nozzle 6 is employed. If the foregoing .alpha. degrees is the zero degrees like the head of the conventional high-pressure hose, namely, the snake wire 11 and the center axial line of the nozzle 6 are on a straight line, the direction of the nozzle 6, namely, the direction of the propulsion force by the high-pressure jet water is not changed even if the high-pressure hose is rotated so that the nozzle 6 is not revolved spirally in the lateral pipe 46a. As means for changing the direction of the propulsion force of the nozzle 6 according to the rotation of the high-pressure hose 2, other various means in addition to the foregoing means can be employed. For example, as shown in FIG. 6, the tip of the high-pressure hose 2 may be tilted by .alpha. degrees relative to the center axial line of the high-pressure hose 2 by a coil like bent spring 50. In FIG. 6, a bent pipe like metal fitting may be used for the bent spring 50. In the embodiment shown in FIG. 6, the snake wire is not fixed to the tip of the nozzle 6, and the universal guide 43 is directly connected to the projecting shaft 9 of the tip of the nozzle 6, but the snake wire may be disposed at a position on an extension of the center axial line of the nozzle 6 which is between the nozzle 6 and the universal guide 43. Also, as another embodiment, as shown in FIG. 7, a pipe like portion 6b of the nozzle 6 is bent for .alpha. degrees, and the tip 6a of the nozzle 6 is tilted relative to the tip of the high-pressure hose 2, or the snake wire may be provided in this embodiment. Also, as shown in FIG. 8, the tip portion 6a of the nozzle 6 may be tilted relative to the pipe like portion 6b, and the tip 6a of the nozzle 6 may be tilted relative to the tip of the high-pressure hose 2. As shown in FIG. 9 and FIG. 10, the snake wire 11 may project from the tip 6b of the nozzle 6 and be tilted relative to the pipe like portion 6b of the nozzle and the universal guide 43 may be connected to the snake wire 11.

CLAIMS:

1. A rotary cleaning device for drain pipes and the like, wherein a nozzle having a center axial line is provided at the forward end of a high pressure hose having a center axial line, and a universal guide is connected to the forward end of the nozzle, and said nozzle has means for jetting high pressure water from the nozzle in a rearward direction at an angle to said center axial line of the nozzle to generate a propulsion force on the nozzle by the reaction force of the water, and said device has means for urging the high pressure hose into the inside of the pipe and simultaneously rotating the high pressure hose, whereby the inside of the pipe is cleaned by the high pressure water jetted from the nozzle, the improvement comprising means mounted on said nozzle for changing the direction of the propulsion force of the nozzle by the rotation of the high pressure hose for causing the nozzle to rotate in the pipe spirally along the inner peripheral surface of the pipe.

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File: USPT

Aug 18, 1987

US-PAT-NO: 4687011

DOCUMENT-IDENTIFIER: US 4687011 A

TITLE: Rotary cleaning device for drain pipe and the like

DATE-ISSUED: August 18, 1987

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Masaru; Uraki	Shiohama,	Ichikawa-shi,	Chiba-ken	JP

APPL-NO: 06/ 782944 [PALM]

DATE FILED: September 24, 1985

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COUNTRY	APPL-NO	APPL-DATE
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US-CL-ISSUED: 134/167C

US-CL-CURRENT: 134/167C

FIELD-OF-SEARCH: 134/167C, 134/168C, 4/256, 15/104.12, 15/14.1R, 239/DIG.13, 239/227, 202/241

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

Search Selected

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	PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
<input type="checkbox"/>	<u>634270</u>	October 1899	Patton	15/104.12
<input type="checkbox"/>	<u>2089597</u>	August 1937	Carter	15/104.12 X
<input type="checkbox"/>	<u>2178801</u>	November 1939	Mattern et al.	15/104.12
<input type="checkbox"/>	<u>2201733</u>	May 1940	Kollmann	15/104.1R X
<input type="checkbox"/>	<u>3195548</u>	July 1965	Lestakis	134/167C
<input type="checkbox"/>	<u>3440096</u>	April 1969	Scott	202/241 X

FOREIGN PATENT DOCUMENTS

FOREIGN-PAT-NO	PUBN-DATE	COUNTRY	US-CL
49-37403	October 1974	JP.	134/167C
54-110658	August 1979	JP	
55-20380	February 1980	JP	
784585	October 1957	GB	

ART-UNIT: 242

PRIMARY-EXAMINER: Coe; Philip R.

ABSTRACT:

A rotary cleaning device for drain pipes and the like wherein a universal guide is connected to a nozzle provided at a tip of a high-pressure hose, and the tip of the high-pressure hose is drawn out into the pipe and high-pressure water from the nozzle is jetted radiantly in a slant rearward direction of the nozzle, and the tip of the high-pressure hose is arranged to advance along the pipe sequentially while the high-pressure hose is rotated, whereby the direction of the nozzle is changed according to the rotation of the high-pressure hose, and the nozzle is rotated spirally along the inner wall of the pipe by the change.

4 Claims, 10 Drawing figures

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L5: Entry 10 of 15

File: DWPI

Sep 12, 2002

DERWENT-ACC-NO: 2001-390169

DERWENT-WEEK: 200262

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TITLE: Device for washing drain pipe with injection holes that are always imposed to the inner peripheral surface

Basic Abstract Text (1):

NOVELTY - A method and a device for washing a drain pipe allowing a nozzle to be rotated along the inner peripheral surface of a pipe even in a lateral pipe, wherein the positions of a plurality of injection holes (10, 11, 12 and 13) formed in the nozzle (1) and the amount of high-pressure water injected from each of the injection holes (10, 11, 12, and 13) are regulated so that the specific injection hole (10) only among the plurality of injection holes is set so as to be opposed always to the inner peripheral surface (5a) of the pipe.

Basic Abstract Text (2):

USE - Device for washing drain pipe with injection holes that are always imposed to the inner peripheral surface

Equivalent Abstract Text (1):

NOVELTY - A method and a device for washing a drain pipe allowing a nozzle to be rotated along the inner peripheral surface of a pipe even in a lateral pipe, wherein the positions of a plurality of injection holes (10, 11, 12 and 13) formed in the nozzle (1) and the amount of high-pressure water injected from each of the injection holes (10, 11, 12, and 13) are regulated so that the specific injection hole (10) only among the plurality of injection holes is set so as to be opposed always to the inner peripheral surface (5a) of the pipe.

Equivalent Abstract Text (2):

USE - Device for washing drain pipe with injection holes that are always imposed to the inner peripheral surface

Standard Title Terms (1):

DEVICE WASHING DRAIN PIPE INJECTION HOLE IMPOSE INNER PERIPHERAL SURFACE